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Success Story

AIRCRAFT BATTLE DAMAGE ASSESSMENT AND REPAIR PROGRAM



The Human Effectiveness Directorate's Aircraft Battle Damage Assessment and Repair (ABDAR) program increases the number of aircraft available for duty by decreasing the time to diagnose damaged aircraft. Over a seven-day air conflict, simulations show ABDAR capabilities can increase the number of sorties available over standard aircraft battle damage repair (ABDR) up to 10%. In a prolonged engagement, the advantages are even greater. In peacetime, ABDAR is an effective ABDR training tool to assess fire- or crash-damaged aircraft or augment the diagnostic tools available in programmed depot maintenance.



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Accomplishment

When combined with highly versatile interactive electronic technical manual (IETM) aircraft technical data, the ABDAR assessment logic decreased assessment time 72% over a standard paper-based assessment, while at the same time increasing accuracy by 96%.

Using less advanced interactive portable document format (IPDF) aircraft data, ABDAR improved time by 41% and accuracy by 80% over a paper-based assessment. ABDAR also shows that F-15 flightline mechanics can perform assessments almost as well as system specialists when using this system.

Background

Specially trained Air Force Materiel Command Combat Logistics Support Squadrons perform ABDAR to restore maximum mission capability to combat-damaged aircraft in minimum time. The first step in restoring capability to an aircraft is to assess the extent of damage to the aircraft, which frequently takes longer than the repair process.

The directorate's ABDAR program researches methods to apply advanced assessment logic in conjunction with electronic technical information to improve aircraft damage assessment. The program began with user interviews to identify and define requirements. The directorate then designed and developed an ABDAR demonstration system based on the requirement study.

The demonstration system's portable maintenance aid provides all the information the user requires, including assessment and repair logic, technical orders, part information, wiring schematics, and troubleshooting data. Directorate engineers developed technical data using both the IPDF and IETM format. A graphical user interface allows users to easily access and comprehend ABDAR information. A directorate-conducted field test evaluated the effectiveness of IPDF and IETM-based data, compared to the current paper-based data.

Additional information

To receive more information about this or other activities in the Air Force Research Laboratory, contact TECH CONNECT, AFRL/XPTT, (800) 203-6451 and you will be directed to the appropriate laboratory expert. (00-HE-07)